# STATE OF CONNECTICUT
## DEPARTMENT OF TRANSPORTATION

**2800 BERLIN TURNPIKE, P.O. BOX 317546**
**NEWINGTON, CONNECTICUT 06131-7546**

**Phone:** 860-594-3129


October 27, 2016

Subject: Project No. 63-692
F.A.P. No. 0913(177)
Bridge Rehabilitation Dutch Point Viaduct Bridge Nos. 01469A and 01469C in the Town of Hartford.

NOTICE TO CONTRACTORS:

This is to notify all concerned and especially the prospective bidders that the bid opening for the subject project is still scheduled for November 2, 2016 at 2:00 P.M. in the Conference Room of the Department of Transportation Administration Building, 2800 Berlin Turnpike, Newington, Connecticut.

**Addendum No. 1** is attached and can also be obtained on the Statewide Contracting Portal at http://www.biznet.ct.gov/scp_search/BidResults.aspx?groupid=64

This addendum is necessary to add new special provisions, revise special provisions, add new contract items, revise contract items, add new plans and revise plans.

Bid Proposal Forms (0063-0692.EBS file and amendment file 0063-0692.00# if applicable) are available for those bidders that have received approval from the Department to bid on the subject project.

To retrieve the official Bid Proposal Forms, please download the electronic bid proposal file and amendment files, if applicable at https://www.bidx.com.

**Pre-Bid Questions and Answers:** Questions pertaining to DOT advertised construction projects must be presented through the CTDOT Pre-Bid Q and A Website. The Department cannot guarantee that all questions will be answered prior to the bid date. **PLEASE NOTE - at 12:01 am, the day before the bid, the subject project(s) being bid will be removed from the Q and A Website, Projects Advertised Section, at which time questions can no longer be submitted through the Q and A Website. At this time, the Q and A for those projects will be considered final, unless otherwise stated and/or the bid is postponed to a future date and time to allow for further questions and answers to be posted.**

H. J. Emond
For: Gregory D. Straka
Contracts Manager

Division of Contracts Administration

**OCTOBER 26, 2016**
**BRIDGE REHABILITATION**
**DUTCH POINT VIADUCT**
**BR. NO'S. 01469A & 01469C**
**FEDERAL AID PROJECT NO. 913(177)**
**STATE PROJECT NO. 63-692**
**CITY OF HARTFORD**

# ADDENDUM NO. 1

This Addendum addresses the following questions and answers contained on the "CT DOT QUESTIONS AND ANSWERS WEBSITE FOR ADVERTISED CONSTRUCTION PROJECTS":

Question and Answer Nos. 2, 4, 5, 6, 7, 9, 10, 11, & 12.

## SPECIAL PROVISIONS

### NEW SPECIAL PROVISIONS

The following Special Provisions are hereby added to the Contract:

- NOTICE TO CONTRACTOR – WORK ON RAILROAD PROPERTY
- ITEM #0101143A – HANDLING AND DISPOSAL OF REGULATED ITEMS
- ITEM #0520041A – PREFORMED JOINT SEAL
- ITEM #0601107A – HIGH EARLY STRENGTH CONCRETE

### REVISED SPECIAL PROVISIONS

The following Special Provisions are hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

- NOTICE TO CONTRACTOR – HAZARDOUS MATERIALS INVESTIGATIONS
- NOTICE TO CONTRACTOR – REMOVAL AND CLEANING FOR AREAS OF HUMAN HABITATION
- ITEM #0707009A – MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)

## CONTRACT ITEMS

### NEW CONTRACT ITEMS

| ITEM # | DESCRIPTION | UNIT | QUANTITY |
|---|---|---|---|
| 0101143A | HANDLING AND DISPOSAL OF REGULATED ITEMS | EST | $10,000 |
| 0520041A | PREFORMED JOINT SEAL | LF | 271 |
| 0601107A | HIGH EARLY STRENGTH CONCRETE | CY | 70 |
| 0602891 | DOWEL BAR SPLICER SYSTEM – EPOXY COATED | EA | 712 |

**REVISED CONTRACT ITEMS**

| ITEM # | DESCRIPTION | ORIGINAL QUANTITY | REVISED QUANTITY |
|---|---|---|---|
| 0601201 | CLASS "F" CONCRETE | 61 CY | 80 CY |
| 0601270A | FULL DEPTH PATH (HIGH EARLY STRENGTH CONCRETE) | 145 CY | 57 CY |

**PLANS**

**NEW PLANS**

The following Plan Sheet is hereby added to the Contract:

03.34-1.A1

**REVISED PLANS**

The following Plan Sheets are hereby deleted and replaced with the like-numbered "A1" Plan Sheets:

02.01, 03.03, 03.13, 03.14, 03.21, 03.26, 03.27, 03.28, 03.33, 03.34, 03.35, 03.36

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The Detailed Estimate Sheets do not reflect these changes.

The Bid Proposal Form has been revised to reflect these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

# NOTICE TO CONTRACTOR – WORK ON RAILROAD PROPERTY

The contractor is hereby notified that all railroad specifications contained elsewhere herein shall be made a part of this contract, and that the contractor shall be bound to comply with all requirements of such specifications. The requirements and conditions set forth in the subject specifications shall be binding on the contractor just as any other specification would be.

## Authority of CSO Engineer

A representative of Connecticut Southern Railroad (CSO) shall have final authority in all matters affecting the safe maintenance of CSO operations and CSO property, and approval shall be obtained by the Agency or its Contractor for methods of construction to avoid interference with CSO operations and CSO property and all other matters contemplated by the Agreement and these Special Provisions.

The Agency and its Contractor shall:

1. Cooperate at all times with the local officials of the CSO or its representative.
2. Use all reasonable care and diligence in the work in order to avoid accidents, damage or unnecessary delay to, or interference with the trains and other property of the CSO.
3. Conduct its work in a manner satisfactory to the Chief Engineer of the CSO or his authorized representative, to perform its work in such manner and at such time as not to unnecessarily interfere with the movements of trains or CSO traffic, and to hold its work open to inspection of CSO inspectors.
4. Avoid unnecessary use of CSO property without written permission of the CSO and to leave CSO roadbed and property in a condition acceptable to the Chief Engineer of the CSO. No storage of materials and/or loose equipment will remain on the ROW.
5. Pay the CSO or owning company for any changes, requested for his convenience, to CSO property, facilities, wire, fiber optic and/or pipe lines other than shown on the plans for the project.
6. Comply with the attached Genesee & Wyoming Contractor Safety Rules.

Methods and procedures for performing work on property of **The Connecticut Southern Railroad Company** must be approved by:

Dave Baer
Vice President
Engineering Northeast
Region Railroads 201 N.
Penn St Punxsutawney,

PA 15767 (814) 938-
1519 dbaer@gwrr.com

**Public Projects Contacts:**

Debra-Ann Bocash
Regional Coordinator of Engineering
2 Federal St., Suite 201
St. Albans, VT 05478
(802) 527-3444
deb.bocash@gwrr.com

Brian Burke, PE*
Public Project Manager
Patrick Engineering Inc.
11 Beacon St., Suite 735
Boston, MA 02108
(617) 583-1929
bburke@patrickco.com
*General Engineering Consultant for CSO

## Project Information

Bridge Rehabilitation of Bridge No. 01469C
I-91 over CSO Railroad and Park River Conduit
City of Hartford, Connecticut
State Project No. 63-692

CSO, Wethersfield subdivision
Mileposts 1.52 & 1.27.

## Train Movements

The **estimated** number of trains (not including specials) operating through the project area at CSO, Wethersfield Subdivision, MP 1.52 & 1.27 is:

**2 to 4** trains per day at **10 mph**, time of trains varies.

## Insurance Requirements

Contractors completing new installations or working on or around any of CSO's properties are required to carry insurance of the following kinds and amounts:

1) Public Liability or Commercial General Liability Insurance ("CGL"), including Contractual Liability Coverage and CG 24 17 "Contractual Liability – Railroads" endorsement, covering all liabilities assumed by the Contractor under this Agreement, without exception or restriction of any kind, with a combined single limit of not less than Five Million Dollars ($5,000,000) for Bodily Injury and/or Property Damage Liability per occurrence, and an aggregate limit of not less than Ten Million Dollars ($10,000,000) per annual policy period. Such insurance policy shall be endorsed to provide a Waiver of Subrogation in favor of the CSOR and its affiliates and shall name Connecticut Southern Railroad and affiliates as Additional Insured. An umbrella policy may be utilized to satisfy the

required limits of liability under this section, but must "follow form" and afford no less coverage than the primary policy.

2) Commercial Automobile Insurance for all owned, non-owned and hired vehicles with a combined single limit of not less than One Million Dollars ($1,000,000) for Bodily Injury and/or Property Damage Liability per occurrence. Such insurance policy shall be endorsed to provide a Waiver of Subrogation in favor of the CSO and its affiliates and shall name the Railroad and its affiliates as Additional Insured.

3) Statutory Workers' Compensation and Employers' Liability Insurance for its employees (if any) with minimum limits of not less than One Million Dollars ($1,000,000) for Bodily Injury by Accident, Each Accident; One Million Dollars ($1,000,000) for Bodily Injury by Disease, Policy Limit; One Million Dollars ($1,000,000) for Bodily Injury by Disease, Each Employee. Such insurance policy shall be endorsed to provide a Waiver of Subrogation in favor of CSO and its affiliates.

4) **Prior to construction within 50' of the railroad tracks,** Contractor shall purchase Railroad Protective Liability Insurance naming Connecticut Southern Railroad as the named insured with limits of Two Million Dollars ($2,000,000) each occurrence and Six Million Dollars ($6,000,000) aggregate limit. The policy shall be issued on a standard ISO form CG 00 35 12 03 or, if available, obtain such coverage from CSO.

If you have questions or require additional information on how to obtain Railroad Protective Liability Insurance coverage through CSO, please contact:

Donna Killingsworth,
MBA Real Estate
Manager
Genesee & Wyoming Railroad Services, Inc.
13901 Sutton Park Dr., S.,
Suite 160
Jacksonville, FL
32224 (904) 900-
6286
donna.killingsworth@gwrr.com

**Accessing Railroad Property**

Any entry or construction activities on railroad right of way must be authorized by the Railroad in writing. Written authorization is obtained through a Right of Entry Permit or Contractor Occupancy/Access Agreement. The application is accessible via the link provided below.

The applicant must submit the completed application to the Real Estate Department including a check or money order, to cover the non-refundable fee of $1,500 made payable to the Railroad. The application must include railroad milepost, railroad subdivision, and scope of work. If any of these items on the application are incomplete, the application will be immediately rejected.

The standard term for a Right of Entry Permit or Contractor Occupancy/Access Agreement is sixty (60) days. Longer terms are reviewed on a case by case basis and may be assessed additional fees.

Upon approval of the application, the Real Estate Department will draft an agreement and forward to the applicant for signature. Application does not guarantee approval. The applicant must then return the signed document to the Real Estate Department along with the pertinent certificate of insurance outlined in the agreement. Once in receipt of these documents, the agreement will then be executed on behalf of the Railroad.

For "standard processing", the entire process takes between 6-8 weeks. "Expedited processing" will reduce the processing time to between 1-2 weeks and costs an additional $1,750. If the application and plans require engineering approval, and are returned to applicant for revisions in order to meet required specifications the expedited process could take longer than 2 weeks.

For any questions regarding Right of Entry Permits, please contact:

Donna Killingsworth, MBA
Real Estate Manager
Genesee & Wyoming Railroad Services, Inc.
13901 Sutton Park Dr., S.,
Suite 160
Jacksonville, FL
32224 (904) 900-
6286
donna.killingsworth@gwrr.com

**Notice of Starting Work**

Agency or its Contractor shall not commence any work on CSO Property or rights-of-way until it has complied with the following conditions:

1. Notify CSO in writing of the date that it intends to commence Work on the Project. Such notice must be received by CSO at least ten (10) business days in advance of the date the Agency or its Contractor proposes to begin Work on CSO property. The notice must refer to this Agreement by date. If flagging service is required, such notice shall be submitted at least thirty (30) business days in advance of the date scheduled to commence the Work.

2. Obtain authorization from the CSO Representative to begin Work on CSO property, such authorization to include an outline of specific conditions with which it must comply.

**Flagging Protection/Inspection Service**

CSO has sole authority to determine the need for flagging required to protect its operations and property. In general, flagging protection will be required whenever Agency or Contractor or their equipment are, or are likely to be, working within fifty (50) feet of live track or other track clearances specified by CSO, or over tracks, or when work being performed adjacent to operating tracks may present hazards to tracks, train operation, or when equipment does or may infringe upon such limits.

No work shall be undertaken until the flag person(s) is/are at the job site. If it is necessary for CSO to advertise a flagging job for bid, it may take up to 90-days to obtain this service, and CSO shall not be liable for the cost of delays attributable to obtaining such service.

The Contractor shall cease work and exit to clear track from a safe distance during active or nearby train traffic, to be decided upon by RR flag person.

CSO shall have the right to assign an individual to the site of the Project to perform inspection service whenever, in the opinion of CSO Representative, such inspection may be necessary. Agency shall reimburse CSO for the costs incurred by CSO for such inspection service. Inspection service shall not relieve Agency or Contractor from liability for its Work.

The Contractor will not be permitted to operate any of his own equipment on CSO tracks except under an acceptable arrangement with the CSO. Such equipment and the operation of such equipment, or equipment rented from the CSO, shall be arranged for by the Contractor with the CSO and the cost for its use, including protection of CSO traffic, shall be borne by the Contractor.

The Contractor shall notify the following named individual for the CSO at least 30 days, or as directed by the authorized representative of the CSO, in advance of starting any work which might require protection:

Rick T. Boucher
Maintenance of Way
Connecticut Southern
Railroad 2 Federal St., Suite
201
St. Albans, VT 05478
(802) 324-3880
rick.boucher2@gwrr.com

The Contractor shall notify the CSO at least 5 working days in advance of suspending or ceasing operations that require a flagger.

## Clearance Requirements

The Contractor shall maintain a clearance envelope for a Plate F Railroad car with hi-roof at all times. (See attached clearance diagram and specification). The resultant clearance envelope is to be verified by the CSO personnel or its representative prior to commencement of work.

## Temporary Crossings

If at any time the Agency or its Contractor desires a temporary crossing of the CSO's tracks, he shall make a request for a temporary crossing from the CSO. If approved, he shall arrange with the CSO, execute its regular form of private grade crossing agreement covering the crossing desired, paying all construction, maintenance, removal, protection and other costs.

## Clean-up

Agency or Contractor, upon completion of the Project, shall remove from CSO's Property any temporary grade crossings, any temporary erosion control measures used to control drainage, all machinery, equipment, surplus materials, falsework, rubbish, or temporary buildings belonging to Agency or Contractor. Agency or Contractor, upon completion of the Project, shall leave CSO Property in neat condition, satisfactory to CSO Representative.

# CONTRACTOR SAFETY RULES

## *Index:*

## *Introduction:*

These rules apply to contractors performing maintenance, repair or specialty work on or about railroad property; on other properties the railroad is responsible for and/or on property directly adjacent to the railroad track.

They do not apply to contractors providing incidental services that do not influence safety, such as janitorial services, food & drink services, laundry, or other supply services.

## *Contractor Responsibilities:*

1. All contractor employees must be trained in the work practices necessary to safely perform his or her job.

2. Document that each contractor employee has received and understands the purpose of the Genesee & Wyoming Inc. Contractor Safety Rules.

    - The contractor must prepare a record, which contains the identity of the contractor employee, the date of the training and means used to verify that the employee understood the training.

3. Ensures that each contractor employee follows the railroad's safety rules and procedures.

4. The contractor must advise the railroad of any hazards presented by the contractor's work when they occur.

5. Unless otherwise provided in the contract, the contractor is responsible for restoring ballast, filling holes created when replacing ties and removing all debris generated as a result of the work that is being performed. Permanent or temporary safety precautions must be in place each day prior to the contractor leaving the worksite. These safety precautions are the responsibility of the contractor when providing hazard protection.

6. All applicable transportation department rules apply to contractors when rail cars are involved in the project i.e. (Riding on equipment, 3 Points of Contact, 3 Step Protection, Getting on or off equipment.)

7. All pertinent railroad safety rules and regional procedures must be reviewed prior to the commencement of work on railroad property.

8. All contractor employee injuries and all railroad property damaged by the contractor must be reported to the regional railroad's claims office and the Genesee & Wyoming Inc. claims office located in Rochester, NY at (716) 463-3406. All reports must be completed in accordance to FRA Reporting requirements.

## *Definitions:*

**Flagman**: An employee designated to direct or restrict the movement of trains at a point on track to provide on-track protection for Roadway Workers. This employee must be qualified on the railroad's operating rules, roadway worker safety; and may not perform any other duties.

**Foul Time**: A method of establishing working limits through exclusive use of the track in which notification is given and recorded by the train dispatcher or block operator to an employee that no trains will operate within a specific segment of controlled track during a specific time period, and the required blocking devices have been placed on the control machine to protect the track fouled. Foul time must remain in effect until the employee to whom the foul time was issued has reported clear of the track.

**Fouling A Track**: The location of an individual or equipment in such proximity to a track that the individual or equipment could be struck by a moving train or on- track equipment, or whenever an individual or equipment is within four (4) feet of the field side of the near running rail.

**Inaccessible Track**: A method of establishing working limits on non-controlled track by preventing access to the working limits.

**Lone Worker**: An individual employee who is not being afforded On- Track Protection by another employee, who is not a member of a gang, and is not engaged in a common task with another employee.

**Restricted Speed**: Prepared to stop within one-half the range of vision-short of a train, obstruction, or switch improperly lined. Be on the lookout for broken rail.

**Roadway Maintenance Machine**: Powered equipment, other than by hand, which is being used on or near the track for maintenance, repair, construction or inspection of track; bridges; roadway; or signal, communication, or electric traction systems. These machines may have road or rail wheels or may be stationary.

**Roadway Maintenance Work Train**: A train that is being operated within working limits in conjunction with roadway maintenance, construction or repairs, under the direction of a designated employee in charge.

**Roadway Worker:** An employee, or employee of a contractor whose duties include inspection, construction, maintenance or repair of track, bridges, roadway, signal and communication systems, electric traction systems, roadway facilities or roadway maintenance machinery on or near track with the potential of fouling a track, and flagmen and watchmen affording on track protection.

**Track Centers:** The distance from the centerline of one track to the centerline of an adjacent track.

**Gage:** The distance (4 ft. 8 1/2 inches) between track rails.

**Clear of Tracks:** Minimum clearance of at least four feet outside the rail of all tracks, and not between main tracks.

**Blue Flag Protection:** A method of providing protection for people who work on, under, or between railroad rolling stock; freight cars, locomotives, etc.

## *1. Accident/Injury Requirements:*

The contractor is required to have an employee qualified to give first aid. If a contractor employee is injured while working on railroad property, he or she should be given first aid at once. Medical assistance should be obtained as soon as possible if further care is needed.

## *2. Personal Protective Equipment:*

### *a. Safety Footwear:*

- Employees whose duties require them to work on or about tracks or equipment are required to wear leather laced type shoes that cover the entire foot. These shoes must be at least six inches high, and have safety toes, must have a defined heel of not more than 1 ¼ inches in height and must have oil resistant soles.
- Shoes that are excessively worn or, do not provide ankle support, have thin, loose or smooth soles must not be worn.

### *b. Eye Protection requirements:*

- Safety glasses must be worn at all times while on railroad property. Protect your vision by wearing safety eyewear with side shields that are clean and properly fitted.
- If you wear corrective lenses, you must wear either approved prescription safety glasses with side shields or cover-all type goggles over your personal glasses:
- Do not face welding, heating, or grinding operations unless you are wearing appropriate eye protection.
- If you are performing work near electric (arc) welding or cutting operations, wear a welding helmet. If a welding helmet is not available, move a safe distance from the operation.

### *c. Hearing Protection:*

- Wear hearing protection when you are welding, cutting, or exposed to flying sparks from these operations. Sparks from welding or cutting can burn your inner ear.
- Wear hearing protection when working in high noise areas in accordance with the railroad's hearing conservation policy, hereby attached.

### *d. Respiratory Protection*

- Wear respiratory protection when you are exposed to fumes, dust, mist, or vapor.

### *e. Protective Clothing*

- Wear protective gloves and clothing when you are handling or working on a wet cell battery, handling, pouring, or using acids, toxic substances, or solvents or, handling creosote materials.

### *f. High-visibility Workwear*

All contractors are required to wear approved high-visibility workwear when they are on duty or on the Company property. Such high-visibility workwear must be worn as the outermost layer of clothing.

i. High-visibility workwear must be approved by the Regional Director of Safety and may consist of a vest, coveralls, T-shirt or other clothing of the prescribed color (yellow/green or orange) equipped with reflective striping as follows: a horizontal band around the waist, two vertical bands and/or an "X" on the back, and two vertical bands

in front from the waist to the top of the shoulders. Stripes must be of silver or yellow reflective material and be at least 2 inches (5 cm) in width.

ii. Vests must be properly sized and constructed with tear-away features as approved by the Regional Director of Safety.

iii. Defective, damaged or lost workwear must be reported immediately to your supervisor and replaced before reporting for duty.

iv. Exceptions:

(a.) High-visibility workwear is not required when you are in these locations:

- Lunchroom;
- Locker room;
- Inside vehicles;
- Inside railway passenger cars;
- Inside locomotive cabs; or
- Offices.

(b.) When employees are working on locomotives or other equipment inside shop buildings, high -visibility workwear is recommended. All employees working outside of shop buildings require approved high-visibility workwear.

(c.) Accommodations for unusual conditions will be at the discretion of the Regional Director of Safety.

### *3. Working On Equipment:*

Do not operate or ride on any equipment unless it is in the performance of your duties and you have been properly authorized to do so. Do not jump from equipment, platforms, or other elevated places. Use steps or a ladder.

### *4. Keep Clear of Suspended Loads or Cables/Chains under tension:*

a. Keep clear of suspended loads.

b. Stand clear when chains, cables or other tackle in under tension.

### *5. Keeping Clear of Electrical Wires:*

Keep at least 12 feet away from a dangling wire or any object that may be in contact with an electrical current. Keep others away until qualified personnel are notified and take charge.

**NOTE: Qualified personnel are employees or contractors who have been trained or qualified to work with electricity.**

### 6. Working With Tools:

a. Do not modify tools.

b. Before you use any tool, examine it for defects. Report any defects to your immediate supervisor.

c. Defective tools must not be used.

### *7. Working Around On-Track Equipment:*

Expect locomotives, cars and track maintenance equipment to move on any track, in either direction, at any time. Therefore, employees must look in both directions before crossing tracks.

### *8. Avoiding Potential Hazards:*

Example: Employees should avoid walking, stepping, resting foot on or sitting on rails, frogs, switches, guardrails, pipe or interlocking apparatus or connections.

### *9. Crossing Tracks:*

Employees must not cross tracks closer than 50 feet from standing locomotives and cars.

### *10. Working Near Moving Trains:*

a. Employees should never carry objects on their shoulders when they are near moving trains.
b. Employees should not cross in front of moving trains or equipment.
c. Placement of Material Near Tracks.
    - Employees should place toolboxes, test equipment and other objects not less than 25 feet from the nearest track. Place all lid apparatus so that lid will open toward track and be secured in place.
    - When performing work near tracks, arrange all tools, material, equipment or other objects so that a moving train or equipment will not strike them.

### *11. Working Near Standing Railroad Equipment:*

Employees should keep themselves and material clear of and never lean against, sit on, or otherwise rest on standing railroad equipment.

### *12. Working In or Near Tunnels – On Bridges or Trestles:*

a. Employees must move to a safe location when a train or equipment moves past their work location in tunnel or on bridges, trestles or overpasses.
b. Employees working in tunnels must be protected by railroad watchmen and must occupy safety manholes when a train approaches. Employees must secure loose clothing and maintain handhold if possible until train has passed.
c. Walking in tunnels or on bridges, trestles and overpasses should be avoided whenever possible.
    - When an employee must walk through a tunnel or across a bridge, trestle or overpass the employee must look both ways and confirm with railroad personnel that they are properly protected and that he or she can safely complete the walk through the tunnel or across the bridge, trestle or overpass before any moving rail equipment passes through the tunnel or over that bridge, trestle or overpass.
    - Extra care must be taken when crossing open floor bridges or trestles.

### *13. Action to take if Safe Passage of a train is at risk:*

If an event occurs that would interfere with the safe passage of trains, the employee must take immediate action to stop trains by radio communication to trains or the person in charge of the track. If protection cannot be immediately ensured, or if communications fail, flag protection must be immediately provided as prescribed by the railroad's rules.

### *14. Protection When Fouling or Working on a Track:*

a. Trains must be fully protected against any known condition that may interfere with their safe passage.
b. If work on or adjacent to a track will create a condition interfering with the safe passage of trains, that work must not be attempted without permission of the employee in charge of the track.
c. On Main Tracks or where Interlocking rules are in effect, protection is required in accordance with railroad operating and safety rules.

### *15. Returning Track to Service:*

When track is to be returned to service, the employee in charge must take the following actions:

a. Notify the Dispatcher or railroad supervisor responsible for the safety of the track of any restrictions necessary for the safe passage of trains.
b. Ascertain that all track cars and trains are clear of the track, and notify the Dispatcher or railroad supervisor responsible for the safety of the track that they are clear.
c. An employee designated by the railroad must inspect the track prior to operating trains.

### *16. Interlocking Switches within Work Area:*

Dispatchers controlling interlocking switches within the Work Area must line such switches for movements within the Work Area and must apply blocking devices to the controls of those switches. These blocking devices must not be removed without permission of the employee in charge of the Work Area. This requirement does not relieve employees operating within the Work Area from complying with interlocking signal indications.

### *17. Flag Protection is Required When:*

a. Work is being performed by others not hired by railroad and the work is being performed on railroad property or adjacent to railroad right of way.
b. Work is being performed by entities hired by the railroad and the work is being performed within 25ft from the center the track.

### *18. Fouling Track*

<u>Whenever fouling track, the following procedures will apply:</u>

**a. Action Required Prior to Issuance:**

Before fouling a track, the employee in charge must determine that no trains have been authorized to move in the direction of the point to be fouled, and must ensure that Stop Signals

have been displayed and blocking devices applied by the dispatcher to controls of Switches and signals leading to the affected track to be protected.

**b. Permission to Foul a Track:**

Permission to foul a track must include the following information:

1. Designation of track to be fouled
2. Location of fouling (mile posts)
3. Time limit for fouling (beginning time and ending time)

**Permission must be repeated by the receiving employee and confirmed by the Dispatcher or railroad supervisor responsible for track safety before it is acted upon.**

***c*. Clearing Fouled Track.**

1. Stop all equipment and vehicles on the right of way while the train is passing
2. Stay clear until you are notified that it is safe to resume work

### *19. Safety Precautions: When working in yards and on tracks:*

a. Keep at least 50 feet from passing trains and equipment, if possible. Face the direction from which the train is approaching. Watch for projecting, dragging, or falling objects.
b. Do not perform work that will interfere with the safe passage of trains.
c. Inspect all passing trains to detect a dangerous condition.
d. Cross tracks at least 50 feet from standing locomotives or cars.
e. Do not cross between cars standing less than 50 ft. apart.
f. Give hand signals for movement of work train or wreck train only if you are a member of the train crew. **EXCEPTION: Emergency stop signals may be given by anyone**

### *20. Employee In Charge:*

The employee in charge is responsible for taking charge of the work performed by assembled gangs and arranging protection for the gangs.

The employee in charge is responsible for the safety, instruction, and performance of all employees under his or her jurisdiction.

The employee in charge advises the foremen of the assembled gangs how each of them will protect the safety of the employees under their direction.

The employee in charge is also responsible for:

a. Ensuring that employees comply with all applicable rules.

Take the track out of service, or get verbal permission to temporarily foul the track according to operating rules.

b. If employees are too scattered to hear the watchman's warning whistle or horn, assign advance (additional) watchmen as needed.
c. If bad weather limits visibility, use additional protective measures as needed.

### *21. Watchmen:*

Responsibilities:

The employee in charge assigns watchmen to watch for approaching trains and warn employees to clear the tracks. If a watchman has not been assigned, the employee in charge acts as a watchman.

Follow these precautions if you have been assigned as a watchman:

a. Give your full attention to watching for trains and warning employees.
b. Do not perform any other duties, even momentarily.
c. If you do not have a full view of trains approaching in either direction, or if you cannot give your full attention to your duties as watchman, signal employees to clear the tracks.
d. Do not leave your station until the employee in charge determines that protection is no longer necessary, or the employee in charge has assigned another watchman who is in position and watching for approaching trains.

### Watchman Duties:

Watchmen are responsible for watching for approaching trains and signaling employees to clear the tracks. If a watchman has not been assigned, the employee in charge acts as a watchman. A watchman's duty is to watch. Follow these procedures when you are performing the duties of a watchman:

When a train approaches from either direction, warn employees in time for them to clear track at least 15 seconds before the train approaches the point of work.

**NOTE:** You may need to give additional warnings around noisy operations. Example: Sounding a whistle or blowing a horn.

### *22. Clearing Controlled Track:*

Follow this procedure for clearing on a Controlled Track, which is any track shown in the timetable as being under the control of a Dispatcher or Block Operator.

a. Clear all tracks, if possible, keeping at least 50 feet from passing trains and equipment.
b. If you cannot clear all tracks;
    - Clear the track on which the train is approaching and the adjacent tracks.
    - Watch for trains in both directions and determine the track on which other trains will approach. Clear enough tracks so that you will not be trapped.
c. If you are operating equipment within the gage of the track adjacent to the track being cleared, dismount the equipment and clear the track.

### *23. Working On Non-Controlled Industrial and Yard Tracks*

Follow these procedures when working on and clearing Non-Controlled Track (Industrial, Yard, or any other track not controlled by a Dispatcher:

Make the working limits inaccessible to trains, engines or other on track equipment using one of the following procedures:

1. A switch lined and effectively secured in one of the following ways:
    - With a private lock on switches that will accommodate them.
    - Properly secured switch point clamp.
    - Driven spikes or wedges that require special tools to remove them.
2. Portable derail with flag.

### *24. Working Around Self Propelled Equipment:*

Follow these safety precautions when working on or around self-propelled equipment:

a. Use the handrail when getting on, riding on, and getting off equipment. Maintain three points of contact.
b. Do not get on or off moving equipment.
c. When working near or observing equipment:
    1. Perform a Job Safety Briefing and communicate with the operator of the equipment to cover the following:
        - Operating procedures.
        - Location of employees working around equipment.
        - Operator blind spots.
        - Signal to warn that equipment will move.
    2. When your duties require you to be around the equipment, you must maintain a 50-foot safe area from the equipment.
    3. If your duties require you to be within the 50-foot safe area of the equipment, perform those duties from the location established in your communication with the operator.

### *25. Roadway Maintenance Machine Operators*

Follow these precautions when operating self propelled equipment:

a. **Communicate with employees in the vicinity of the equipment and cover;**
    - Normal operating procedures including operator's blind spots.
    - Test the brakes immediately after starting.
    - Do not allow anyone to distract you or interfere with your duties.
    - Constantly look out for obstructions or unsafe conditions in the direction you are moving.
    - If you cannot see ahead or behind, designate another employee to keep a lookout for you.

# 5 Clearance Requirements (USA)

## 5.1 Horizontal *

The minimum clearance will be 8'-6" from the centerline of track to the nearest obstruction. Horizontal clearances are to be increased 1-1/2" per degree of curve where the facility is located adjacent to or within 80' of a turnout or curve limits.

## 5.2 Vertical *

5.2.1 23' from top of rail to nearest overhead obstruction.

5.2.2 27' from top of rail to overhead wires.

5.2.3 27' minimum from top of rail to power lines plus NEA code requirements (usually 27' to 35').

5.2.4 5-1/2 feet minimum below base of rail of any track to the top of pipelines, etc. (see Genesee & Wyoming, Inc. General Specifications for Sub-grade and Above-grade Utility Crossings of Railroad Right-of-Way.

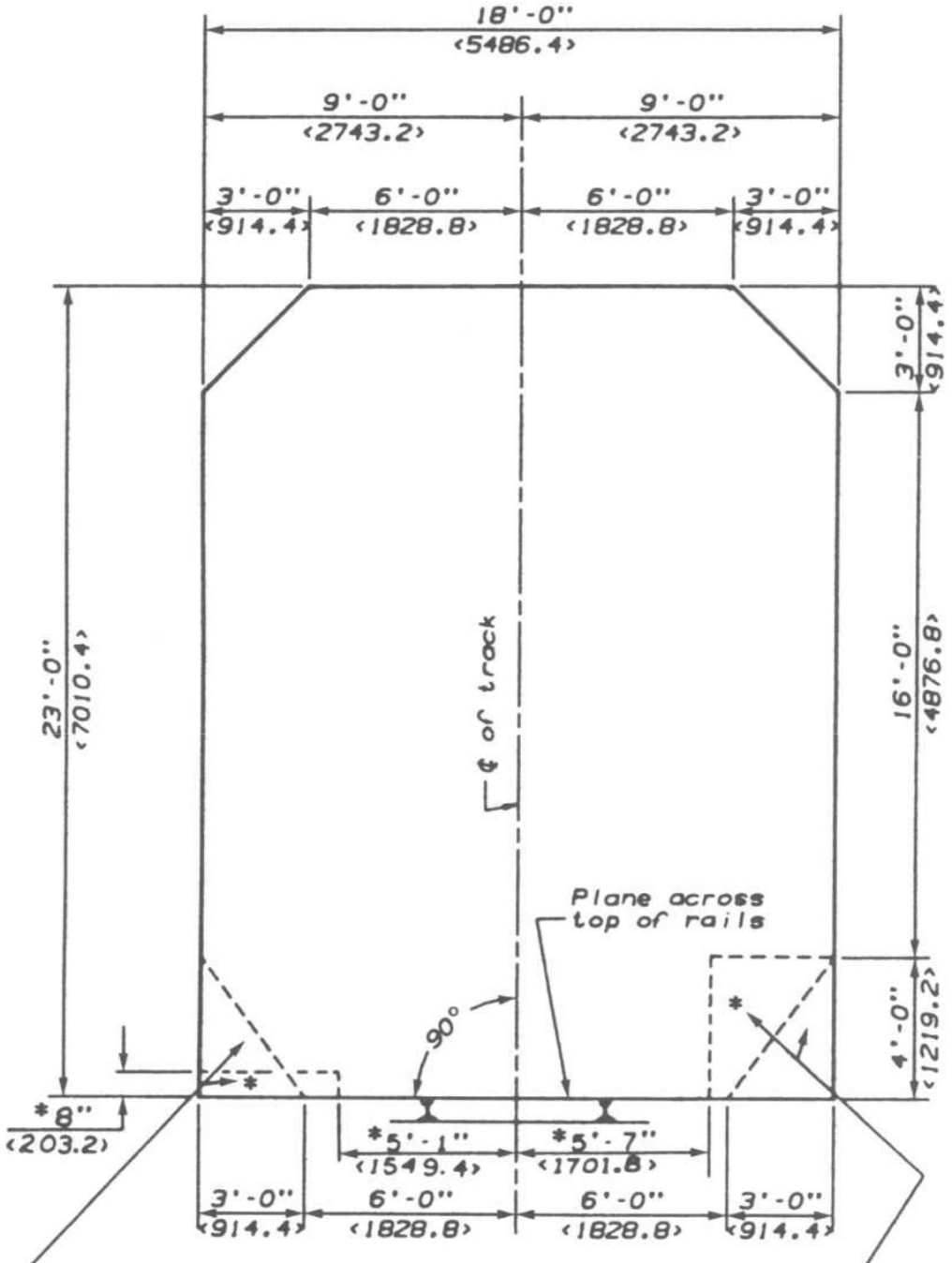
5.2.5 Certain states may accept vertical or horizontal clearances slightly less than Genesee & Wyoming, Inc. standards. Management normally will accept the State's lesser clearance requirements, although the Industry will be required to sign an Impaired Clearance Agreement with the Railroad. **In any case, when either horizontal or vertical clearance is less than those of the State Railway or Public Service Commission, the Industry shall secure necessary approval from the appropriate State Authority for each impaired clearance.** The agreement covering service to the Industry's track will include the specific reference to the substandard clearance involved. When State Law requires clearances that are more restrictive such laws will govern.

*FOR BRIDGE WORK REQUIRING TEMPORARY SHORING OR FALSEWORK, TEMPORARY MINIMUM CLEARANCES ARE AS FOLLOWS:

MIN. VERTICAL CLEARANCE: 23'

MIN. HORIZONTAL CLEARANCE: 12'

**Industrial Track Specifications**




TANGENT TRACK

**Bracketed dimensions are in mm.**

## ITEM #0101143A – HANDLING AND DISPOSAL OF REGULATED ITEMS

**Description:**

Work under this item shall include the management (handling and disposal) of regulated items and all associated work by persons who are employed by a CTDEEP permitted Spill Contractor and trained/certified in accordance with OSHA Hazard Communication regulations. Regulated items include hazardous and other materials and wastes, the disposal of which is restricted by Federal and/or State laws and regulations, and which may be a component of equipment or other items located on-site. Regulated items include those listed herein, or additional similar items identified on site by the Engineer. Work under this item does not include asbestos containing materials, lead paint, contaminated or hazardous soils.

Activities shall be performed in accordance with, but not limited to, the current revision of the USEPA & CTDEEP Hazardous Waste Regulations (40 CFR 260-282, 22a-209 and 22a-449(c)), USEPA PCB Regulations (40 CFR 761), USEPA Protection of Stratospheric Ozone (40 CFR 82), OSHA Hazard Communication (29 CFR 1910.1200), OSHA Hazardous Waste & Emergency Response Regulations (29 CFR 1910.120), USDOT Hazardous Materials Regulation (49 CFR 171-180), OSHA, RCRA, CERCLA, CAA, TSCA, and all other laws and regulations.

The work activities include the removal, handling, packing, labeling, transport, manifesting, and recycling or disposal of various regulated items at the Project site prior to beginning planned renovation/demolition activities.

The Contractor is solely responsible for verifying actual locations and quantities of the items with hazardous/regulated material/waste constituents and for their proper handling and disposal. The recycling or proper disposal, as appropriate, of all regulated items shall be completed prior to the initiation of any demolition or renovation activities.

**Materials:**

All materials shall be suitable for the management of regulated items and shall meet all applicable federal, state and local regulations. Such materials include, but are not limited to, proper containers, packing materials, labels, signs, shipping papers, personnel protective equipment (PPE) and spill kits.

**Construction Methods:**

**(1) Allowable Disposal/Recycling Facilities**

Disposal facilities to be utilized shall be capable of accepting biohazardous waste. Contractor shall verify facility acceptance of the waste materials to be generated.

**(2) Submittals**

Thirty (30) days prior to commencement of work involving the management of regulated items, the Contractor shall submit to the Engineer for approval, the following documentation:

1. Copy of Spill Contractor Permit registration issued by the CTDEEP.
2. Hazard communication training for all employees performing this work.
3. Names of the treatment facilities, recycling facilities and/or disposal facilities the Contractor intends to use to receive each type of regulated item.
4. Hazardous Material Transporter USDOT Certificate of Registration for each biohazardous waste transporter.
5. Hazardous Material Transporter Permit for the State of Connecticut, the destination state(s), and all other applicable states for each biohazardous waste transporter.

Contractor shall provide the Engineer with a minimum of 48 hours notice in advance of scheduling, changing or canceling work activities.

**(3) Regulated Item Management Provisions**

(a) General Requirements

The Contractor's OSHA Competent Person shall be in control on the job site at all times during hazardous material management work activities. This person must be capable of identifying existing hazards, possess the authority to implement corrective measures to reduce/eliminate the hazards, comply with applicable Federal, State and Local regulations that mandate work practices, and be capable of performing the work of this contract. All employees who perform regulated material management related work shall be properly trained and qualified to perform such duties.

All labor, materials, tools, equipment, services, testing, insurance, and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these specifications, shall be provided by the Contractor.

Ladders and/or scaffolds shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.

Inventory data from investigative surveys throughout the buildings are included herein and are presented for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the quantities or extent of the regulated items to be managed. The Contractor shall be responsible for verification of all field conditions affecting performance of the work. The Contractor shall submit to the Engineer for concurrence any additional items not listed herein that it believes to be regulated items included under this item. However, compliance with applicable requirements is solely the responsibility of the Contractor.

The Engineer will provide a Project Monitor to monitor the activities of the Contractor and inspect the work required. Environmental sampling shall be conducted as deemed necessary by the Engineer. Spill areas shall be cleaned by the Contractor until accepted by the Engineer. The Engineer may sample the spill area to demonstrate Contractor compliance with an acceptable standard.

(b) Personnel Protection

Prior to commencing work, the Contractor shall provide hazard communication training to all employees as necessary in accordance with OSHA 29 CFR 1926.59 and 29 CFR 1910.1200 and instruct all workers in all aspects of personnel protection, work procedures, emergency procedures and use of equipment including procedures unique to this project. Worker health and safety protocols that address potential and/or actual risk of exposure to site specific hazards are solely the responsibility of the Contractor.

The Contractor shall provide respiratory protection that meets the requirements of OSHA as required in 29 CFR 1910.134 and 29 CFR 1926.1000. A formal respiratory protection program, including appropriate medical surveillance, must be implemented in accordance with OSHA standards. The Contractor shall, as necessary, conduct exposure assessment air sampling, analysis and reporting to ensure the workers are afforded appropriate respiratory protection.

The Contractor shall provide and require all workers to wear appropriate personnel protective equipment, including protective clothing and respiratory protection, as required, within regulated work areas which exceed OSHA Personnel Exposure Limits (PELs) or when handling hazardous materials.

(c) Regulated Item Management Work Procedures

The Contractor shall not begin work until the Project Monitor is on-site.

Prior to beginning work on-site, the Contractor shall prepare waste characterization profile forms for each type of waste stream to be generated and forward such forms to the Engineer for review, approval and signature. Upon approval, the Contractor shall forward such forms to the appropriate disposal facilities for acceptance.

The Contractor shall utilize all appropriate engineering controls and safety and protective equipment while performing the work in accordance with OSHA, USEPA, USDOT, CTDEEP and Connecticut Department of Public Health DPH regulations.

The Contractor shall employ work practices so as to minimize the disturbance of the constituents in the regulated items, and prevent breakage and spills. In the event of a spill, the Contractor shall cordon off the area and notify the Engineer. The Contractor is responsible to have spills and the effected areas decontaminated to the acceptance of the Engineer by personnel trained in hazardous waste operator emergency response.

The Contractor shall carefully and properly remove, handle, pack, label and manifest all of the regulated items in waste containers specified and suitable to contain the waste in accordance with all federal and state regulations.

Prior to transportation and recycling and/or disposal, all proper USEPA, OSHA, CTDEEP and USDOT labels and placards shall be affixed to the waste containers and hazardous materials shipping papers such as waste manifests/bills of lading shall be completed.

**Homeless activity was observed beneath/at Bridges 01469A & 01469C, including, but not limited to human waste, sharps, bedding/clothing, etc with the potential for contamination with human fluids presenting a potential exposure to blood borne pathogens and a need for management/disposal as biohazardous waste.**

**Prior to construction activity which would disturb such materials, properly remove, handle, pack, label, transport, manifest and recycle or dispose of the regulated items from those listed below:**

- **Biohazardous/Blood Borne Pathogen (BBP) Waste – human fecal waste, sharps, bedding, clothing with potential for contamination with human fluids.**

**Upon discovery of any previously unidentified regulated items during replacement activities, the Contractor shall immediately notify the Engineer and work shall cease in that area until the Engineer can determine the extent of any impact and proper handling procedures are implemented.**

(d) Waste Disposal

Efforts shall be made to recycle the constituents of the regulated items rather than dispose of them in accordance with the waste minimization efforts required under RCRA.

RCRA hazardous waste shall not be stored on the job site in excess of 90 calendar days from the accumulation start date.

Connecticut Regulated Waste shall not be transported to a RCRA or TSCA permitted facility for disposal, unless otherwise allowed by the Engineer in writing.

All non-RCRA hazardous waste materials, regulated waste materials and recyclable waste items shall be manifested separately from RCRA and TSCA hazardous waste, and documented properly on non-hazardous waste manifests, waste shipment records, bills of lading or other appropriate shipping papers for transportation to the recycling and/or disposal facility.

The Contractor shall prepare each lab pack list and shipping document (manifests, waste shipment records, bills of lading, etc.) with all of the required information completed (including types of waste, proper shipping name, categories, packing numbers, amounts of waste, etc.) in accordance with applicable federal and state regulations. The document will be signed by an authorized agent representing ConnDOT as the Generator for each load that is packed to leave the site.

The Contractor shall forward the appropriate original copies of shipping papers to the Engineer the same day the regulated items leave the project site.

All vehicles departing the site transporting hazardous materials shall display proper USDOT placards, as appropriate for the type of waste being transported.

(e) Project Closeout Documents:

Within thirty (30) days after completion of the on-site project work, the Contractor shall submit to the Engineer copies of the following completed documents:

1. Hazardous Waste Manifests
2. Waste Shipment Records/Bills of Lading
3. Recycling Receipts

**Documents 1. through 3. must include the signature of an authorized disposal facility representative acknowledging receipt of hazardous materials.**

**Method of Measurement:**

The work of "Handling and Disposal of Regulated Items" shall be provided for in accordance with Article 1.04.05 – Extra Work.

**Basis of Payment:**

The work of "Handling and Disposal of Regulated Items" shall be paid for in accordance with Article 1.04.05 – Extra Work, which price shall include the management, removal, handling, packing, labeling, transport, manifesting, recycling or disposal of the regulated constituents in the specific equipment/items scheduled for impact at the project site, and all equipment, materials, tools and labor incidental to the work.

Final payment will not be made until completed copies of all Manifest(s), Waste Shipment Records, Bills of Lading and/or Recycling Receipts have been provided to the Engineer. Once

completed and facility-signed copies have been received in their entirety, the Engineer will make the final payment.

| Pay Item | Pay Unit |
|---|---|
| Handling and Disposal of Regulated Items | Estimated |

END OF SECTION

## ITEM #0520041A- PREFORMED JOINT SEAL

**Description:** Work under this item shall consist of furnishing and installing a preformed joint seal as shown on the plans and in conformance with these Specifications or as directed by the Engineer. Work shall also include a pre-installation survey for measurement of the existing joint opening width and preparation of the joint opening surfaces as needed to ensure proper performance of the preformed joint seal. The preformed joint seal shall seal the deck surface in accordance with the plans and prevent water from seeping through the joint area.

**Materials:** The preformed joint seal shall be one of the following:

1. Silicoflex:
   RJ Watson, Inc-- Bridge and Structural Engineered Systems
   78 John Glenn Drive
   Amherst, New York 14228
   Tel: (716) 691-3301 Fax: (716) 691-3305
   Website: http://www.Ijwatson.com

2. V-Seal:
   D.S. Brown Company
   300 East Cherry Street
   North Baltimore, Ohio
   Tel: (419) 257-3561
   Website: http://www.dsbrown.com

3. Bridge Expansion Joint System (B.E.J.S.): EMSEAL Joint Systems Ltd.
   25 Bridle Lane,
   Westborough, MA 01581
   Tel: (508) 836-0280
   Website: http://www.emseal.com

Refer to the Contract plans for areas where use of the EMSEAL BEJS is prohibited due to unsuitable existing joint openings.

A Materials Certificate for all components of the selected preformed joint seal shall be submitted by the Contractor in accordance with the requirements of Article 1.06.07

**Construction Methods:** All work at each joint location shall be accomplished in conformance with the traffic requirements in the Special Provisions, "Maintenance and Protection of Traffic" and "Prosecution and Progress".

At all joint locations, the Contractor shall perform a survey of the existing joint openings. This information shall include, but not be limited to:

a) Joint opening width (taken at distances along the length of the joint not to exceed

6’)

b) Temperature at time of measurement of joint opening width.
c) Identification of sharp discontinuities in the joint alignment or its surfaces.

At least 30 days prior to start of the work, the Contractor shall submit a detailed Quality Control Plan to the Engineer for review and comment for the installation of the selected joint system. The submittal shall include:

a) All information gathered during field survey.
b) A list of all manufactured materials and their properties to be incorporated in the joint system, including, but not limited to the primer, bonding agent, sealant, and the sealing element.
c) A detailed step by step installation procedure and a list of the specific equipment to be used for the installation.

The Quality Control Plan must fully comply with the specification's requirements and address all known and anticipated field conditions, including periods of inclement weather.

A technical representative of the selected joint system, approved by the manufacturer, shall be notified of the scheduled installation a minimum of 2 weeks in advance and be present to provide direction and assistance for the first joint installation and succeeding joint installations until the Contractor becomes proficient in the work and to the satisfaction of the Engineer.

Tools, equipment, and techniques used to prepare the joints and materials shall be approved by the Engineer and the manufacturer's technical representative prior to the start of construction.

The minimum temperature for installing any of the qualified preformed joint seals is 40 degrees Fahrenheit and rising, ambient air temperature. The joint surfaces shall be completely dry before installing any of the components of the selected joint seal. The selected joint seal cannot be installed immediately after precipitation or if precipitation is forecasted. Joint preparation and installation of the selected preformed joint seal must be done during the same day.

Any discontinuities, projections, divots or other anomalies in the joint opening surfaces that would negatively affect the performance of the preformed joint seal shall be remedied by the Contractor by methods recommended by the manufacturer and as approved by the Engineer.

All vertical faces adjacent to the joint opening shall be sandblasted prior to application of any of the joint seal components. All remnants of the prior existing joint sealing system (rubberized gland, silicone sealant, etc...) shall be removed from the existing headers to remain. Any discontinuities or sharp projections into the plane of the joint shall be ground smooth prior to sandblasting. Whenever abrasive blast cleaning is performed under this Specification, the Contractor shall take adequate measures to ensure that the abrasive blast

cleaning will not cause damage to adjacent traffic or other facilities. Traffic will not be allowed to pass over the joint after sandblasting has occurred.

Following sandblasting, the joint's surfaces shall be wiped down or blown clean as recommended by the manufacturer.

The selected joint sealing system shall be installed continuously with no splices in the preformed seal in the roadway section, as recommended by the manufacture of the selected preformed joint seal.

When the sealing operations are completed, the joint opening shall be effectively sealed against infiltration of water. Any seal that does not effectively seal against water shall be removed and replaced at the Contractor's expense.

Treatment at gutterline and curbs/parapets:
At curbs, the preformed joint sealing element shall run continuously from the roadway section through the upturn at the curb and continue as shown on the plans.

At parapets or walls, the joint sealing element shall be upturned at the parapet/wall for a continuous seal through this transition. Use of a prefabricated piece (fabricated a minimum of 24 hours prior to use) to "make" the bend at the wall is allowed though field splicing of this prefabricated piece shall not be allowed in the roadway section (BEJS by EMSEAL excepted from this requirement). Parapets and walls shall be sealed for the entire vertical portion and across the top with the sealing element-bends and splices nine inches above the curbline and higher are allowed to be field fabricated. The inner and outer parapet barriers on bridge 1765 at the Span 3 hanger joint and the Pier 4 expansion joint shall both be sealed along the entire vertical portion of each.

**Method of Measurement:** This work will be measured for payment by the number of linear feet of preformed joint sealing system installed. The measurement will be made at the top surface and along the centerline of the joint and shall include all portions of the installation in the roadway, in the curbs and sidewalk(s), and within parapets and medians.

**Basis of Payment:** This work will be paid for at the Contract unit price per linear foot for "Preformed Joint Sealing System," complete in place, including all materials, equipment, tools, and labor incidental thereto.

Included in the contract unit price is the pre-installation survey of the existing joint opening and the cost of assistance from a technical representative of the selected joint system.

| Pay Item | Pay Unit |
|---|---|
| Preformed Joint Sealing System | LF |

# ITEM #0601107A- HIGH EARLY STRENGTH CONCRETE

**Description:** Work under this item shall include surface preparation and concrete placement where designated on the plans. The concrete shall meet the requirements described in this specification.

**Materials:** The material shall conform to the following requirements:

1. High Early Strength Concrete-The high early strength concrete shall conform to one of the following:

A. The Contractor shall design and submit to the Engineer for approval a high early strength concrete mix. This mix shall be air-entrained, and shall be composed of Portland cement, fine and coarse aggregates (maximum size shall be #67), approved admixtures, additives, and water. The mix shall contain between 4 and 7 percent-entrained air, and shall attain a 1-hour compressive strength of 2,500 psi. Additional requirements for the mix are as follows:

- A minimum 1 hour compressive strength of 2,500 psi, 24 hour compressive strength of 3,500 psi, and 28 day compressive strength of 5,000 psi. (ASTM C39)
- The ability to withstand 50 cycles of freeze thaw (10% NaCl solution) with a maximum loss of 6% (ASTM C666)

B. In lieu of the above high early strength concrete mix, the Contractor may propose the use of a proprietary type mix that will meet the same physical requirements as those stated above. A mix design shall be submitted for this material, stating the percentage of each component to be utilized. Unless another material is approved by the Engineer, one of the following proprietary materials may be used:

HD-50
Dayton Superior Corporation
1125 Byers Road
Miamisburg, OH
45342 (888) 977-9600

Rapid Set DOT Cement
CTS Cement
Manufacturing
1023 Dogwood Lane
West Chester, PA
19382 (215) 429-4956

Speed Crete Green Line
Tamms Industries
730 Casey Ave.
Wilkes-Barre, PA
18702 (800) 218-2667

2. Regardless of the type of high early strength concrete proposed by the Contractor, substantive data that demonstrates the ability of the material to meet the specification requirements shall be submitted with the proposed mix design at least two weeks prior to its use.

**Construction Methods:**

1) Surface Preparation: The concrete surface and reinforcing steel to receive High Early Strength Concrete shall be either sandblasted or water blasted, followed by air blasting in order to remove all loose particles and dust. All blasting operations shall be performed using techniques approved by the Engineer, taking care to protect all pedestrians, traffic, and adjacent property. All compressed air sources shall have properly sized and designed oil separators, attached and functional, to allow delivered air at the nozzle to be oil-free. The area of closure pour shall be cleaned of all additional loose or powder-like rust, oil, solvent, grease, dirt, dust, bitumen, loose particles, and foreign matter just prior to pouring.

The adjacent concrete surfaces to receive High Early Strength Concrete shall be dampened and all free water removed. The Contractor is also responsible for providing any and all means necessary to prevent separation of the high early strength concrete from the adjacent concrete.

2) Mixing, Placing, and Finishing: High early strength concrete shall be mixed and placed in accordance with the applicable portions of Article 06.01.03. Mixing and placing shall not be done unless the ambient temperature is 40 degrees F. and rising; however, ambient temperatures shall not eliminate the Contractor's responsibility to meet the required concrete compressive strengths contained within this specification. The temperature of the high early strength concrete shall be between 60 and 95 deg. F at the time of placement. The Contractor shall finish placement of concrete a minimum of 2.5 hours prior to opening the roadway to traffic. All mixing shall be accomplished by means of a standard drum-type portable mixer. A continuous type mobile mixer may be used if permitted by the Engineer. The Contractor shall calibrate the mobile mixer under supervision of the Engineer. Calibration shall be in accordance with the applicable sections of ASTM method C685. The total mix shall be limited to the quantity that can be mixed and placed in 15 minutes. The concrete mix shall be spread evenly and compacted to a level slightly above the bridge deck surface. Vibration, spading or rodding shall be used to thoroughly compact concrete and fill the entire closure pour area. Where practical, internal vibration shall be used.

Vibrating plates or vibrating screeds shall be used on the surface for strike off and consolidation. After the concrete has been spread evenly and compacted to a level slightly above the adjacent concrete surface, the vibrating plate or screed shall be drawn over the surface at a uniform speed without stopping, in order to finish the surface smooth and even with adjacent concrete. The surface shall be float finished. Finishing operations shall be completed before initial set takes place.

3) Curing: Immediately after finishing the concrete surface, a sheet of 4 mil polyethylene shall be placed over all new concrete in conjunction with insulating curing material. Unless approved otherwise by the Engineer, the insulating material shall be a minimum of 2-inch thick closed cell extruded polystyrene insulation board that conforms with the requirements of ASTM C578. It shall have a minimum certified R-value often (10). Except for gutterlines, the insulating material shall extend a minimum of 12 inches beyond the limits of the newly poured concrete, and shall be kept in intimate contact with the surrounding pavement surface to prevent lifting of the material. It shall be weighted down with sandbags that weigh at least 15 pounds each. The sand bags shall be placed a minimum of two (2) feet on center around the new concrete.

4) Tolerances in Finished Surfaces: The surface profile of the concrete deck area shall not vary more than ⅛ inch in a distance of 10 feet, when a 10 foot long straightedge is placed on the surface at any angle relative to the centerline of the bridge. Humps in the concrete deck that exceed the ⅛ inch tolerance shall be ground down by approved machinery. Sags or depressions in the surface of the concrete deck area that exceed ⅛ inch tolerance shall be repaired by removal of the concrete in the depression over an area determined by the Engineer to a depth of 1 inch and repaired in the previously described manner.

5) Test Cylinders: The Contractor shall make and perform compressive strength tests on representative cylinders under the supervision of the Engineer. The dimensions, type of cylinder mold and number of cylinders shall be specified by the Engineer.

A portable compression testing machine shall be provided by the Contractor and available on site for cylinder testing. All testing and equipment shall conform to ASTM C39.

Note: This compression machine must be calibrated in accordance with the provisions of Section 5, ASTM C39.

6) Time Schedule: Placement of deck protective membrane systems, including woven glass fabric, shall not commence until the concrete has achieved a minimum compressive strength of 3,500 psi. as determined by the compressive strength tests, or until authorized by the Engineer. All work shall proceed as required by the "Maintenance and Protection of Traffic" and "Prosecution and Progress" specifications elsewhere within the contract documents.

**Method of Measurement:** This work will be measured for payment by the actual number of cubic yards of high early concrete used to reconstruct the deck.

**Basis of Payment:** This work will be paid for at the contract unit price per cubic yard of reconstructed deck with "High Early Strength Concrete", complete in place and accepted, which price shall include surface preparation of deck areas, concrete placement, all materials, equipment, including the portable compression testing machine required for the testing of the concrete, and all tools, labor and work incidental thereto.

| Pay Item | Pay Unit |
|---|---|
| High Early Strength Concrete | C.Y. |

## NOTICE TO CONTRACTOR – HAZARDOUS MATERIALS INVESTIGATIONS

A limited hazardous materials site investigation has been conducted at Bridge Nos. 01469A & 01469C in Hartford, Connecticut. The scope of inspection was limited to the representative components projected for impact.

Results of the survey identified detectable levels of lead in paint associated with the structural steel/metal bridge components at Bridge No. 01469A (1.4% by weight). No detectable amounts of lead in paint associated with the structural steel/metal bridge surfaces (0.0 mg/cm2 / ND<0.10% by weight) were identified at Bridge No. 01469C.

At Bridge No. 01469A, the projected paint waste debris associated with the structural steel/metal bridge components (1.1 mg/l) was characterized as non-hazardous, non-RCRA waste. Since no detectable amounts of lead were present on painted surfaces of the structural steel/metal bridge components at Bridge No. 01469C, any paint waste generated would be classified as non-hazardous, non-RCRA waste.

All steel and metal generated from work tasks (painted or not) shall be segregated and recycled as scrap metal at a scrap metal recycling facility. The recycling of scrap metal (regardless of lead paint concentration) is exempt from USEPA RCRA and CTDEEP Hazardous Waste Regulation.

Black road tar drippings beneath Bridge No. 01469A was found to contain no asbestos.

Homeless activity was observed at Bridge Nos. 01469A & 01469C, including but not limited to bedding, trash, feces and sharps with potential blood borne pathogens & biohazardous waste concerns.

No pigeon/bird guano accumulations were identified at Bridge Nos. 01469A & 01469C.

The Contractor is hereby notified that these hazardous materials requiring special management or disposal procedures will be encountered during various construction activities conducted within the project limits. The Contractor will be required to implement appropriate health and safety measures for all construction activities impacting these materials. These measures shall include, but are not limited to, air monitoring, engineering controls, personal protective equipment and decontamination, equipment decontamination and personnel training. WORKER HEALTH AND SAFETY PROTOCOLS WHICH ADDRESS POTENTIAL AND/OR ACTUAL RISK OF EXPOSURE TO SITE SPECIFIC HAZARDS ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

The Department, as Generator, will provide an authorized representative to sign all manifests and waste profile documentation required by disposal facilities for disposal of hazardous materials.

The Sections which shall be reviewed by the Contractor include, but are not limited to, the following:

- Item No. 0020904A – Lead Compliance for Abrasive Blast Cleaning
- Item No. 0603223A – Disposal of CRW Lead Debris from Abrasive Blast Cleaning
- Item No. 0020903A – Lead Compliance for Miscellaneous Exterior Tasks
- Item No. 0101143A – Handling and Disposal of Regulated Items

The Contractor is alerted to the fact that a Department environmental consultant may be on site for abatement and related activities, to collect environmental samples (if necessary), and to observe site conditions for the State.

Information pertaining to the results of the limited hazardous materials investigation discussed can be found in the document listed below. This document shall be available for review at the Office of Contracts, 2800 Berlin Turnpike, Newington, Connecticut.

- HazMat Inspection - Bridge Nos. 01469A & 01469C, Hartford, CT, TRC Environmental Corporation, June 24, 2016.

## NOTICE TO CONTRACTOR - REMOVAL AND CLEANING FOR AREAS OF HUMAN HABITATION

The Contractor is hereby advised that there may exist areas of human habitation under Bridge No. 01469A and C. When suspected areas of human habitation are encountered within the under bridge work area the Contractor shall immediately notify the Engineer. The Contractor shall perform no work within areas of human habitation until directed to by the Engineer.

The Engineer is responsible, with the assistance of other State agencies, for the prior notification and eviction of people living illegally within the State Right-of-Way. The Contractor has no responsibility for these specific actions.

When directed by the Engineer, the Contractor with State Police oversight shall remove all solid waste and restore the area to its original condition as directed by the Engineer.

All solid waste shall be removed by the Contractor and disposed of in accordance to Item No. 0101143A – Handling and Disposal of Regulated Items.

# ITEM #0707009A – MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)

**Description**: Work under this item consists of furnishing and installing a seamless elastomeric waterproofing membrane system applied to a concrete or steel surface as shown on the plans, in accordance with this specification and as directed by the Engineer. Work shall also include conditioning of the surface to be coated and all quality-control testing noted herein.

The completed membrane system shall be comprised of a primer coat followed by the membrane coating which is applied in one or two layers for a minimum total thickness of 80 mil (2 mm), an additional 40 mil (1mm) membrane layer with aggregate broadcast into the material while still wet, and a bond coat of bitumen-based adhesive material.

**Materials:** The Contractor shall select a waterproofing membrane system from the Department's current Qualified Product List (QPL) for Spray-Applied Membrane Waterproofing System. All materials incorporated in the works shall meet the Manufacturer's specification for the chosen system. The Engineer will reject any system that is not on the QPL.

Materials Certificate: The Contractor shall submit to the Engineer a Materials Certificate for the primer and membrane and bond coat material in accordance with the requirements of Article 1.06.07.

**Construction Methods:** At least ten days prior to installation of the membrane system, the Contractor shall submit to the Engineer, the manufacturer's recommended procedure for preparing the deck surface, pre-treatment or preparing at cracks and gaps, treatment at curbs, vertical surfaces or discontinuities, applying the primer and membrane, and placing of aggregated coat. Procedures shall also include recommended repairs of system non-compliant issues identified during application. The system shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

A technical representative, in the direct employ of the manufacturer, shall be present on-site immediately prior to and during application of the membrane. The representative shall inspect and approve the surface prior to priming, and provide guidance on the handling, mixing and addition of components and observe application of the primer and membrane. The representative shall perform all required quality-control testing and remain on the Project site until the membrane has fully cured.
All quality-control testing, including verbal direction or observations on the day of the installation, shall be recorded and submitted to the Engineer for inclusion in the Project's records. A submittal of the quality-control testing data shall be received by project personnel prior to any paving over the finished membrane or within 24 hours following completion of any staged portion of the work.

1. Applicator Approval: The Contractor's membrane Applicator shall be fully trained and licensed by the membrane manufacturer and shall have successfully completed at least

three spray membrane projects in the past five years. The Contractor shall furnish references from those projects, including names of contact persons and the names, addresses and phone numbers of persons who supervised the projects. This information shall be submitted to the Engineer prior to the start of construction. The Engineer shall have sole authority to determine the adequacy and compliance of the submitted information. Inadequate proof of ability to perform the work will be grounds to reject proposed applicators.

2. Job Conditions:

   (a) Environmental Requirements: Air and substrate temperatures shall be between 32°F (0°C) and 104°F (40°C) providing the substrate is above the dew point. Outside of this range, the Manufacturer shall be consulted.

   The Applicator shall be provided with adequate disposal facilities for non hazardous waste generated during installation of the membrane system. The applicator shall follow safety instructions regarding respirators and safety equipment.

   (b) Safety Requirements: All open flames and spark producing equipment shall be removed from the work area prior to commencement of application.

   "No Smoking" signs shall be visibly posted at the job site during application of the membrane waterproofing.

   Personnel not involved in membrane application shall be kept out of the work area.

3. Delivery, Storage and Handling:

   (a) Packaging and Shipping: All components of the membrane system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the products type and batch number.

   (b) Storage and Protection: The Applicator shall be provided with a storage area for all components. The area shall be cool, dry and out of direct sunlight and shall be in accordance with the Manufacturer's recommendations and relevant health and safety regulations.

   Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

   (c) Shelf Life - Membrane Components: Packaging of all membrane components shall include a shelf life date sealed by the Manufacturer. No membrane components whose shelf life has expired shall be used.

4. Surface Preparation:

(a) Protection: The Applicator shall be responsible for the protection of equipment and adjacent areas from over spray or other contamination. Parapets and bridge joints shall be masked prior to application of the materials.

(b) Surface Preparation: Sharp peaks and discontinuities shall be ground smooth. The surface profile of the prepared substrate is not to exceed 1/4 inch (6 mm) (peak to valley) and areas of minor surface deterioration of 1/2 inch (13 mm) and greater in depth shall also be repaired. The extent and location of the surface patches require the approval of the Engineer before the membrane system is applied.

Surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae, growth, laitance, friable matter, dirt, bituminous products, and previous waterproofing materials. If required, degreasing shall be done by detergent washing in accordance with ASTM D4258.

The surface shall be abrasively cleaned, in accordance with ASTM D4259, to provide a sound substrate free from laitance.

Voids, honeycombed areas, and blow holes on vertical surfaces shall be repaired in the same manner.

All steel components to receive membrane waterproofing shall be blast cleaned in accordance with SSPC SP6 and coated with the membrane waterproofing system within the same work shift.

5. Inspection and Testing: Prior to priming of the surface, the Engineer, Applicator and Manufacturer's technical representative shall inspect and approve the prepared substrate.

(a) Random tests for deck moisture content shall be conducted on the substrate by the Applicator at the job site using a "Sovereign Portable Electronic Moisture Master Meter," a "Tramex CMEXpertII Concrete Moisture Meter" or approved equal. The minimum frequency shall be one test per 1000 s.f. (100 sq.m) but not less than three tests per day per bridge. Additional tests may be required if atmospheric conditions change and retest of the substrate moisture content is warranted.

The membrane system shall not be installed on substrate with a moisture content greater than that recommended by the system's manufacturer, but shall not be greater than 6%, whichever is less.

(b) Random tests for adequate tensile bond strength shall be conducted on the substrate using an adhesion tester in accordance with the requirements of ASTM D4541. The minimum frequency shall be one test per 5,000 s.f. (500 sq.m) but not less than three adhesion tests per bridge.

Adequate surface preparation will be indicated by tensile bond strengths of primer to the substrate greater than or equal to 150 psi (1.0 MPa) or failure in a concrete surface and greater than or equal to 300 psi (2.1 MPa) for steel surfaces.

If the tensile bond strength is lower than the minimum specified, the Engineer may request additional substrate preparation. Any primer not adequately applied shall be removed and a new primer applied at the Contractor's expense, as directed by Engineer.

(c) Cracks and grouted joints shall be treated in accordance with the Manufacturer's recommendations, as approved or directed by the Engineer.

6. Application:

(a) The System shall be applied in four distinct steps as follows:
   1) Substrate preparation and gap/joint bridging preparation
   2) Priming
   3) Membrane application
   4) Membrane with aggregate

(b) Immediately prior to the application of any components of the System, the surface shall be dry (see Section 5a of this specification) and any remaining dust or loose particles shall be removed using clean, dry oil-free compressed air or industrial vacuum.

(c) Where the area to be treated is bound by a vertical surface (e.g. curb or wall), the membrane system may be continued up the vertical, as shown on the plans or as directed by the Engineer.

(d) The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results, in accordance with the Manufacturer's recommendations or as approved or directed by the Engineer.

(e) A neat finish with well defined boundaries and straight edges shall be provided by the Applicator.

(f) Primer: The primer shall consist of one coat with an overall coverage rate of 125 to 175 s.f./gal (3.0 to 4.3sq.m/1) unless otherwise recommended in the manufacturer's written instructions.

All components shall be measured and mixed in accordance with the Manufacturer's recommendations.

The primer shall be spray applied using a single component spray system approved for use by the Manufacturer. If required by site conditions and allowed by the manufacturer, brush or roller application will be allowed.

The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer's instructions, whichever time is greater, prior to application of the first lift of waterproofing membrane.

Porous concrete (brick) may require a second coat of primer should the first coat be absorbed.

(g) Membrane: The waterproofing membrane shall consist of one or two coats for a total dry film thickness of 80 mils (2 mm). If applied in two coats, the second coat shall be of a contrasting color to aid in quality assurance and inspection.

The membrane shall be comprised of Components A and B and a hardener powder which is to be added to Component B in accordance with the Manufacturer's recommendations.

The substrate shall be coated in a methodical manner.

Thickness checks: For each layer, checks for wet film thickness using a gauge pin or standard comb-type thickness gauge shall be carried out typically once every 100 s.f. (9 sq.m). Where rapid set time of the membrane does not allow for wet film thickness checks, ultrasonic testing (steel surfaces only), calibrated point-penetrating (destructive) testing, in-situ sampling (cutout of small sections for measuring thicknesses), or other methods approved by the Engineer shall be employed for determination of dry film thickness. The measured thickness of each and every individual test of the membrane shall be greater than or equal to the required thickness.

Bond Strength: Random tests for adequate tensile bond strength shall be conducted on the membrane in accordance with the requirements of ASTM D4541. The minimum test frequency shall be one test per 5,000 s.f. (500 sq.m) but no less than three adhesion tests per bridge. Adequate adhesion will be indicated by tensile bond strengths of the membrane to the substrate of greater than or equal to 150 psi (0.7 MPa) or failure in a concrete surface and greater than or equal to 300 psi (2.1 MPa) for steel surfaces.

Spark Testing: Following application of the membrane, test for pin holes in the cured membrane system over the entire application area in accordance with ASTM D4787- "Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates." Conduct the test at voltages recommended by the manufacturer to prevent damage to the membrane.

Repair the membrane system following destructive testing and correct any deficiencies in the membrane system or substrate noted during quality-control testing in accordance with the manufacturer's recommendations to the satisfaction of the Engineer at no additional cost to the State.

(h) Repairs: If an area is left untreated or the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the system. The damaged areas shall be cut back to sound materials and wiped with solvent (e.g. acetone) up to a width of at least four inches (100 mm) on the periphery, removing any contaminants unless otherwise recommended by the manufacturer. The substrate shall be primed as necessary, followed by the membrane. A continuous layer shall be obtained over the substrate with a four inches (100 mm) overlap onto existing membrane.

Where the membrane is to be joined to existing cured material, the new application shall overlap the existing by at least four inches (100 mm). Cleaning and surface preparation on areas to be lapped shall be as recommended in the manufacturer's written instructions.

(i) Aggregated Finish:
1) Apply an additional 40 mil (1 mm) thick layer of the membrane material immediately followed by an aggregate coating, before the membrane cures, at a rate to fully cover the exposed area. The membrane and aggregate shall be fully integrated after the aggregate has been applied and the membrane cured.
2) Localized areas not fully coated shall be touched-up with additional membrane and aggregate as needed.
3) Remove loose and excess aggregate from the surface to the satisfaction of the Engineer and dispose of properly after application prior to allowing traffic onto finished surface or application of tack coat.

(j) Bond Coat:
Prior to application of a bituminous concrete overlay, the aggregated finish shall be coated with a bonding material. The bonding material shall be per the membrane waterproofing manufacturer's recommendations.

7. Final Review: The Engineer and the Applicator shall jointly review the area(s) over which the completed System has been installed. Any irregularities or other items that do not meet the requirements of the Engineer shall be addressed at this time.

**Method of Measurement:** The quantity to be paid for under this item shall be the number of square yards (square meters) of waterproofed surface completed and accepted.

**Basis of Payment:** This item will be paid for at the contract unit price per square yard (square meter) of "Membrane Waterproofing (Cold Liquid Elastomeric)," complete in place, which price shall include all surface preparation, furnishing, storing and applying the system, technical representative and quality control tests, and any necessary repairs and remediation work as well as all materials, equipment, tools, labor incidental to this work.

| Pay Item | Pay Unit |
|---|---|
| Membrane Waterproofing (Cold Liquid Elastomeric) | s.y. (sq.m) |